UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 7097

CR NO. 7

OVER THE

RED RIVER OF THE NORTH

DISTRICT 2 - POLK COUNTY, CITY OF CLIMAX

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 5221

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure unit inspected at Bridge No. 7097, Pier 2, was in good condition with no defects of structural significance observed. The channel bottom appeared to be stable with no evidence of significant scour.

INSPECTION FINDINGS:

(A) Moderate to heavy timber debris consisting of logs and branches 2 feet diameter and smaller was observed at the south (upstream) end and along the entire east face of Pier 2. The debris extended from the channel bottom up 3 feet and 6 feet off the east face and 10 feet off the upstream nose towards the west.

(B) Vertical crack up to 1/8 inch wide was located on east face of Pier 2 extending from the strut to the channel bottom at midpoint of the pier.

(C) Footing exposure was observed at the east side of the north column with a maximum vertical exposure of 1 foot.

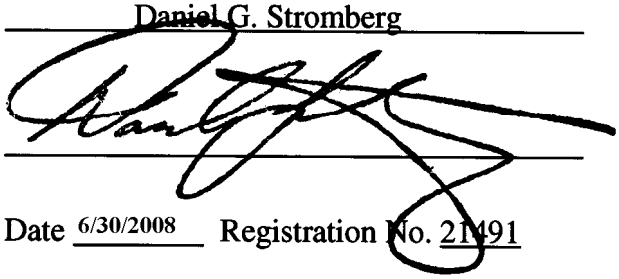
RECOMMENDATIONS:

(A) Monitor the timber debris, and if found to be increasing in the future, removal operations may become warranted.

(B) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

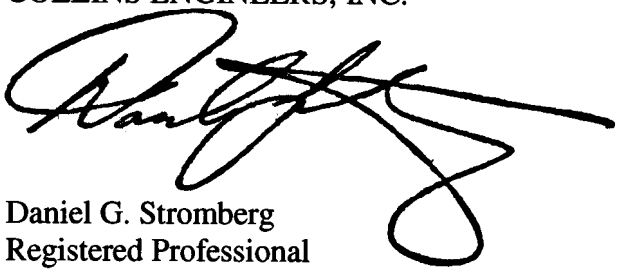
Daniel G. Stromberg



Date 6/30/2008 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.



Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 7097

Feature Crossed: Red River of the North

Feature Carried: CR No. 1

Location: District 2 - Polk County, City of Climax

Bridge Description: The superstructure consists of two steel through truss spans and five steel beam approach span. The superstructure is supported by two reinforced concrete abutments, three steel pile framed bents, and three reinforced concrete piers. The abutments are supported by treated timber piles. The piers are supported by untreated timber piles. The substructure units are designated West Abutment, Piers 1, 2 and 3, Bents 1, 2, and 3, and East Abutment. The piers support the two truss spans over the river and are numbered from west to east.

2. INSPECTION DATA

Professional Engineer/Team Leader: Daniel G. Stromberg, P.E., S.E.

Dive Team: Denis Redzic, Valerie Roustan

Date: September 18, 2007

Weather Conditions: Cloudy, 58°F

Underwater Visibility: None/Negligible

Waterway Velocity: 2.0 f.p.s

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Pier 2.

General Shape: The pier consists of a reinforced concrete cap supported by two multi-sided columns connected by a slender diaphragm wall braced with an integral horizontal strut. The pier is founded on a rectangular footing supported by timber piles.

Maximum Water Depth at Substructure Inspected: Approximately 8.0 Feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier cap at the downstream end of Pier 2.

Water Surface: The waterline was approximately 55.8 feet below reference.
Waterline Elevation = 797.9.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 8

Item 61: Channel and Channel Protection: Code 6

Item 92B: Underwater Inspection: Code B/09/07

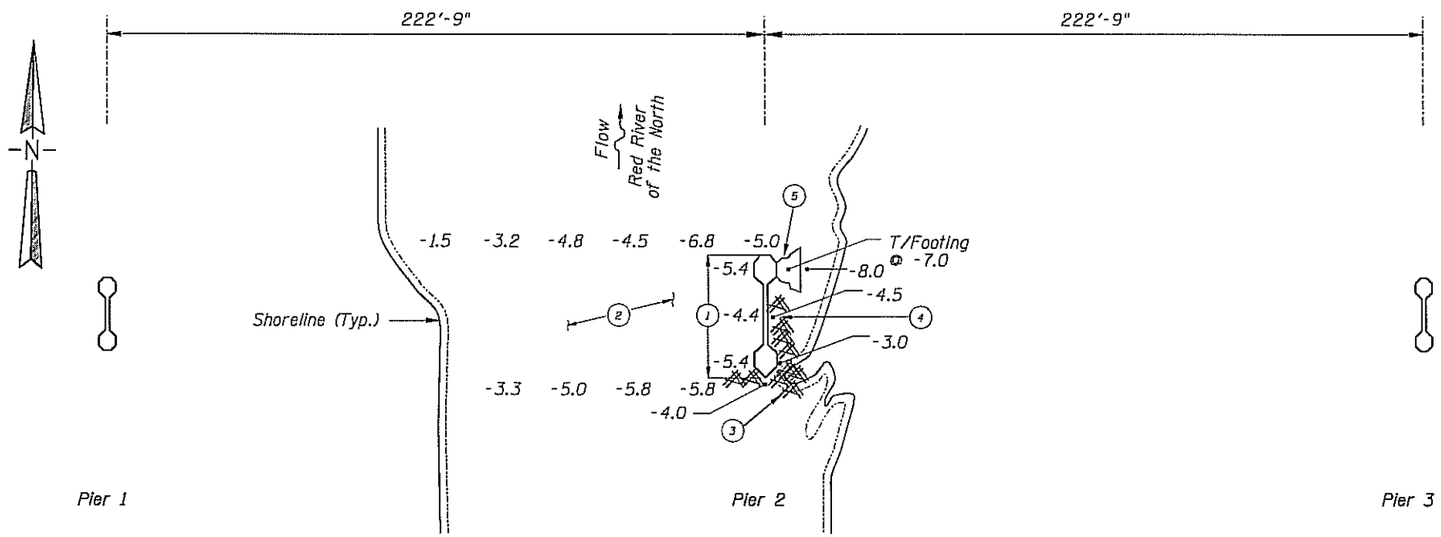
Item 113: Scour Critical Bridges: Code F/07

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

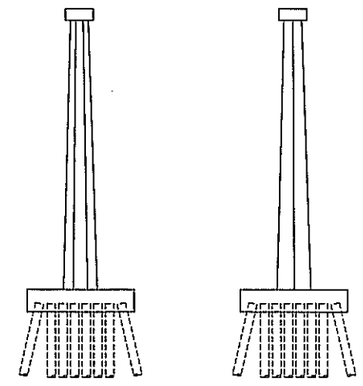
_____Yes X No

Photograph 1. Overall View of the Structure, Looking Southwest.

Photograph 2. View of Pier 2, Looking West.



SOUNDING PLAN



TYPICAL END VIEWS OF PIER 2

GENERAL NOTES:

1. Pier 2 was inspected underwater.
2. At the time of inspection on September 18, 2007, the waterline was located approximately 55.8 feet below the top of the pier cap at the downstream end of Pier 2. This corresponds to a waterline elevation of 797.9 based on design drawings.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at the truss panel points between the substructure units.

INSPECTION NOTES:

(1) Overall, concrete was smooth and sound with no significant defects.

(2) The channel bottom consisted of soft silt with 2 feet of maximum probe rod penetration.

(3) Moderate to heavy timber debris consisting of logs and branches 2 feet in diameter and smaller was observed at south end and east face of Pier 2. The debris extended from channel bottom to 3 feet above waterline and 6 feet off the east face and 10 feet off the upstream nose.

(4) Vertical crack 1/8 inch wide extending from strut to channel bottom was located at midpoint of pier on east face of Pier 1.

(5) Footing exposure at north column of the pier on east side with a maximum vertical exposure of 1 foot.

Legend

-5.0 Sounding Depth (9/18/07)

Timber Debris

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

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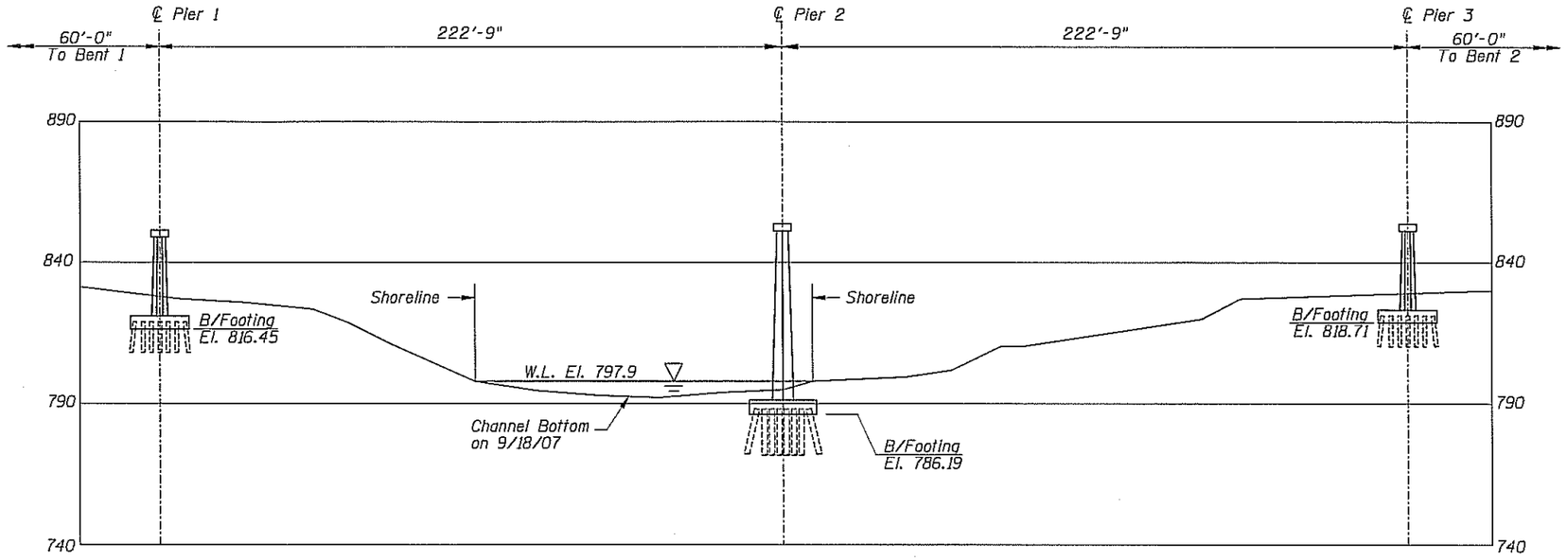
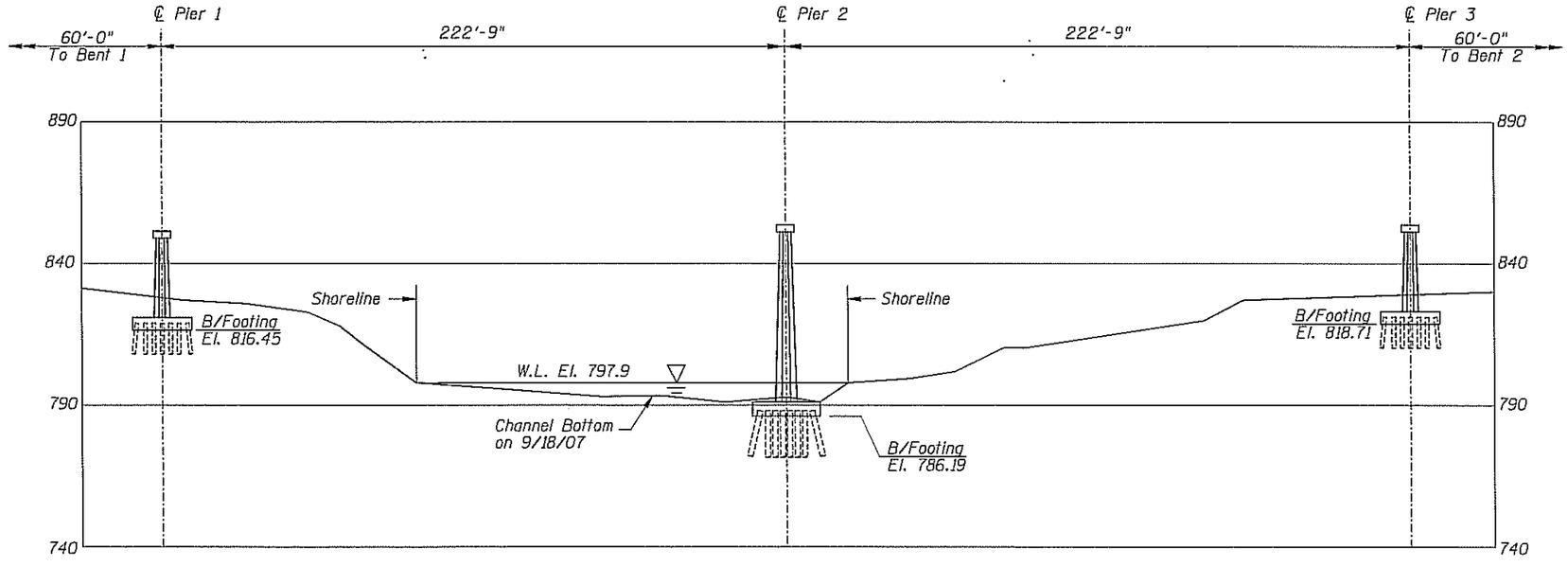
OVER THE RED RIVER OF THE NORTH
DISTRICT 2, POLK COUNTY, CITY OF CLIMAX

INSPECTION AND SOUNDING PLAN

Drawn By: PRH	COLLINS ENGINEERS, INC. 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9100 www.collinsengr.com	Date: SEPT., 2007
Checked By: MDK		Scale: NTS
Code: 52217097		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

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UPSTREAM AND DOWNSTREAM
FASCIA PROFILES

Drawn By: PRH	COLLINS ENGINEERS, INC. 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinseng.com	Date: SEPT., 2007
Checked By: MDK		Scale: 1"=50'
Code: 52217097		Figure No.: 2

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: September 18, 2007
ON-SITE TEAM LEADER: Daniel G. Stromberg, P.E., S.E.
BRIDGE NO: 7097 WEATHER: Cloudy, 58°F
WATERWAY CROSSED: Red River of the North
DIVING OPERATION: X SCUBA _____ SURFACE SUPPLIED AIR
_____ OTHER
PERSONNEL: Denis Redzic, Valerie Roustan
EQUIPMENT: Scuba, U/W Light, Scraper, Sounding Pole, Lead Line, Probe Rod, Camera
TIME IN WATER: 2:50 p.m.
TIME OUT OF WATER: 3:20 p.m.
WATERWAY DATA: VELOCITY 2 f.p.s
VISIBILITY Negligible/None
DEPTH 8.0 feet maximum at Pier 2.
ELEMENTS INSPECTED: Pier 2
REMARKS: Overall, the concrete was smooth and sound. Moderate to heavy timber debris consisting of logs and branches 2 feet diameter and smaller was observed at the south end and around the entire east face of Pier 2. The debris extended from the channel bottom up 3 feet and 6 feet off the east face and 10 feet off the upstream nose towards the west. A vertical crack 1/8 inch wide was located on east face of Pier 2 from the strut to the channel bottom at midpoint of pier wall. Footing exposure was observed at the east side of the north column with a maximum vertical exposure of 1 foot.

FURTHER ACTION NEEDED: _____ YES X NO

Monitor the timber debris, and if found to be increasing in the future, removal operations may become warranted.

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 7097
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Daniel G. Stromberg, P.E., S.E.
WATERWAY CROSSED Red River of the North

INSPECTION DATE September 18, 2007

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.		MAXIMUM DEPTH OF WATER	PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
	UNIT DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 2	8.0’	N	8	8	9	N	8	7	8	N	6	6	8	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete was smooth and sound. Moderate to heavy timber debris consisting of logs and branches 2 feet diameter and smaller was observed at the south end and around the entire east face of Pier 2. The debris extended from the channel bottom up 3 feet and 6 feet off the east face and 10 feet off the upstream nose towards the west. A vertical crack 1/8 inch wide was located on east face of Pier 2 from the strut to the channel bottom at midpoint of pier wall. Footing exposure was observed at the east side of the north column with a maximum vertical exposure of 1 foot.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.